

REMARKS

1. The Examiner has indicated that claims 1-25 and 30-35 are objected because of the informalities. More specifically:

a. The point is well taken. The term "QAM" in claims 1-25 and 30-35 has been replaced by the term Quadrature Amplitude Modulation (QAM).

b. The point is well taken. The claims 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, and 24 are amended to define the states.

c. The applicants respectfully disagrees. Indeed, the state machine performs the same step (A) Performing an automatic gain control (AGC) operation on said incoming Quadrature Amplitude Modulation (QAM) signal to maintain a steady amplitude of said QAM signal in two different modes:

In mode (A1) (step 2) the state machine enters the state "1A", wherein the state machine employs a minimum number of symbols to transition from the state 1A" to a next state.

On the other hand, in mode (A2) (step 4) the state machine performs a process of coarse frequency estimation of the incoming Quadrature Amplitude Modulation (QAM) signal by entering the state "1B".

Thus, it is believed that the sub step references are important to differentiate

between different modes of the state machine.

d. The point is well taken. The appropriate correction has been made.

e. The applicants respectfully disagrees. Indeed, in claim 1 the preamble includes the term “an equalizer”, thus in the step (c) the wording “said equalizer” is believed to be appropriate.

f. The point is well taken. The appropriate correction has been made.

g. The point is well taken. The appropriate correction has been made.

h. The point is well taken. The appropriate correction has been made.

i. The point is well taken. The appropriate correction has been made.

j. The point is well taken. The appropriate correction has been made.

k. The point is well taken. The appropriate correction has been made.

l. The point is well taken. The appropriate correction has been made.

m. The applicants respectfully disagrees because claim 21 now depends on the amended claim 20.

n. The point is well taken. The appropriate correction has been made.

o. The point is well taken. The appropriate correction has been made.

p. The applicants respectfully disagrees because means (B) in claim 30 includes the term “a symbol timing recovery loop”.

q. The point is well taken. The appropriate correction has been made.

2. The Examiner has rejected claims 30-35 under 35 U. S. C. 102 (b) as being anticipated by Lantremange (U. S. Patent No. 6, 115, 433).

More specifically, regarding claim 30, the Examiner has indicated that Lantremange discloses an apparatus (FIG. 1A and 1B) for automated acquisition of a QAM signal employing a state machine progressing from an initial state to a final state, and performing the following operations: automatic gain control (AGC), timing recovery, Blind Equalization, carrier recovery, and means for minimizing residual error distortion using the decision directed equalization (DDE).

The Applicant respectfully disagrees in regard to claim 30.

Under 35 U.S.C. Section 102, a party asserting that a patent claim is anticipated must demonstrate, among other things, identity of invention. One who seeks such a finding must show that each element of the claim in issue is found,

found, either expressly described or under principles of inherency, in a single prior art reference. Thus, in order for Lantremange to anticipate claim 30 there must be identity of invention between the Lantremange patent and claim 30, and further that all the elements of claim 30 must be found in Lantremange. It is believed, however, that the present invention as it is described according to claim 30 as amended is different from Lantremange.

Indeed, there are structural differences between the Lantremange device and the present invention as it is claimed by the amended claim 1. More specifically, the Lantremange device does not disclose a means for performing a frequency sweep to increase an acquisition bandwidth of a carrier recovery loop.

On the other hand, the present invention according to amended claim 30 teaches: a means for performing a frequency sweep to increase an acquisition bandwidth of a carrier recovery loop; wherein said frequency sweep is used if a frequency offset of said acquired Quadrature Amplitude Modulation (QAM) signal is greater than said acquisition bandwidth of said carrier recovery loop.

The frequency sweep operation is fully disclosed in the specification of the present patent application as filed. More specifically:

*"after blind equalization is performed in state "4", the carrier acquisition (in state "5") operates with all the parameters above and optionally with a frequency sweep (loop test #5). The frequency sweep uses 4 parameters for its operation. A frequency sweep enable flag, a frequency sweep delta, and an upper and lower frequency sweep limit is defined by the user and are only used in state "5". Also within state "5", a sweep frequency is maintained and outputted to the carrier loop. The*

*carrier loop. The sweep frequency is initially set to the lower frequency sweep limit in state "4". The frequency sweep only takes effect if the maximum symbol count is exceeded. If the maximum symbol count is exceeded and the frequency sweep enable flag is set, the sweep frequency is updated by adding the sweep delta. This process continues until either the error threshold is met or the upper sweep frequency limit is exceeded. If the upper sweep frequency limit is exceeded, the state transitions back to state "0".*

Thus, it is believed that there is no identity of invention between the Lantremange patent and claim 30 as amended of the present invention.

To anticipate under 35 U.S.C. Section 102, in addition to the identity of elements, these same elements must function in substantially the same way to produce substantially the same result. The identity of function and result required in the above test refers not to the identity of the function of each element in the prior art as compared to the function of the corresponding element of the invention, but to the function and the result produced by the combination of all elements in the invention as compared to the function and result of the combination of the allegedly identical elements in the prior art reference.

Applying the above test of anticipation to claim 30 as amended and Lantremange's device, it is believed that the device described in claim 30 as amended of the present invention functions and produces results very differently from Lantremange.

The function of the present invention according to claim 30 as amended is:

- (1) to perform an automated acquisition of an incoming QAM signal by employing a state machine progressing from an initial state to a final state;**
- (2) and if a frequency offset of the acquired QAM signal is greater than the acquisition bandwidth of the carrier recovery loop, to increase an acquisition bandwidth of the carrier recovery loop by performing a frequency sweep.**

The result of the present invention according to claim 30 as amended is:

**To increase the acquisition bandwidth of the carrier recovery loop by performing a frequency sweep while performing an automated acquisition of a QAM signal by employing a state machine progressing from an initial state to a final state.**

On the other hand, the function of the Lantremange device according to its preferred embodiment **does not include the mode of performing a frequency sweep while performing an automated acquisition of QAM signal. As a result, the Lantremange device can not acquire the incoming QAM signal if a frequency offset of the acquired QAM signal is greater than the acquisition bandwidth of the carrier recovery loop.**

It is believed that according to the above test for anticipation the device of the present invention described in claim 30 as amended is not anticipated by the Lantremange device.

The devices described in claims 31-35 of the present invention are substantially the same device as the device of claim 30 as amended, because the claims 31-35 are the claims dependent on claim 30 as amended. Therefore, there is no identity of invention between the device of claims 31-35 and the Lantremange device. Thus, the present invention as it is claimed by the depended on amended claim 30 claims 31-35 is also believed not to be anticipated by Lantremange patent.

Claims 30-35 of the present invention as amended are also believed to be unobvious in view of Lantremange under the Graham test. To satisfy the Graham test it is sufficient to ascertain the differences in function and the differences in result between the claims in issue and the prior art. For the same reasons as it was discussed above there are significant differences in function and significant differences in result between the present invention according to claims 30-35 and Lantremange device. It follows, that there is no suggestion in Lantremange of the present invention as it is claimed in claims 30-35. Therefore, the present invention is not obvious in view of Lantremange.

3. The Examiner has rejected claims 1, 2, 4-8, 10, 12, 14, 16, 18-24 under 35 U. S. C. 103(a) as being unpatentable over Lantremange in view of Zhu et al. (US 2004/005022). The applicant respectfully disagrees.

Indeed, the claims 1, 2, 4-8, 10, 12, 14, 16, 18-24 as amended are the method claims corresponding to the apparatus claims 30-35. As was stated above,

the apparatus claims 30-35 of the present invention as amended are believed to be unobvious in view of Lantremange under the Graham test. Therefore, the method claims 1, 2, 4-8, 10, 12, 14, 16, 18-24 as amended are also believed to be unobvious in view of Lantremange under the Graham test. It follows, that the method claims 1, 2, 4-8, 10, 12, 14, 16, 18-24 as amended are also believed to be unobvious over Lantremange in view of Zhu because the hypothetical Lantremange in view of Zhu device is a narrower device than the Lantremange device itself.

4. The Examiner has rejected claim 3 under 35 U. S. C. 103(a) as being unpatentable over Lantremange in view of Zhu and in further view of Mobin et al. (U. S. Patent No. 6,249,554). The applicant respectfully disagrees.

Indeed, the claim 3 is a method claim corresponding to the apparatus claims 30-35. As was stated above, the apparatus claims 30-35 of the present invention as amended are believed to be unobvious in view of Lantremange under the Graham test. Therefore, the method claim 3 is believed to be unobvious in view of Lantremange under the Graham test. It follows, that the method claim 3 is believed to be unobvious over Lantremange in view of Zhu and further in view of Mobin because the hypothetical Lantremange in view of Zhu and further in view of Mobin device is a narrower device than the Lantremange device itself.

5. The Examiner has rejected claims 9, 13, and 17 under 35 U. S. C. 103(a) as being unpatentable over Lantremange in view of Zhu and in further view of Fukuoka et al. (U. S. Patent No. 6,421,378). The applicant respectfully disagrees.



disagrees.

Indeed, the claims 9, 13, and 17 are method claims corresponding to the apparatus claims 30-35. As was stated above, the apparatus claims 30-35 of the present invention as amended are believed to be unobvious in view of Lantremange under the Graham test. Therefore, the method claims 9, 13, and 17 are also believed to be unobvious in view of Lantremange under the Graham test. It follows, that the method claims 9, 13, and 17 are believed to be unobvious over Lantremange in view of Zhu and further in view of Fukuoka because the hypothetical Lantremange in view of Zhu and further in view of Fukuoka device is a narrower device than the Lantremange device itself.

6. The Examiner has rejected claim 11 under 35 U. S. C. 103(a) as being unpatentable over Lantremange in view of Zhu and in further view of Li (U. S. Patent No. 6,904,087). The applicant respectfully disagrees.

Indeed, the claim 11 is a method claim corresponding to the apparatus claims 30-35. As was stated above, the apparatus claims 30-35 of the present invention as amended are believed to be unobvious in view of Lantremange under the Graham test. Therefore, the method claim 11 is also believed to be unobvious in view of Lantremange under the Graham test. It follows, that the method claim 11 is believed to be unobvious over Lantremange in view of Zhu and further in view of Li because the hypothetical Lantremange in view of Zhu and further in view of Li device is a narrower device than the Lantremange device itself.

7. The Examiner has rejected claim 15 under 35 U. S. C. 103(a) as being unpatentable over Lantremange in view of Zhu and in further view of Schemmann et al. (U. S. -2003/0076570). The applicant respectfully disagrees.

Indeed, the claim 15 is a method claim corresponding to the apparatus claims 30-35. As was stated above, the apparatus claims 30-35 of the present invention as amended are believed to be unobvious in view of Lantremange under the Graham test. Therefore, the method claim 15 is also believed to be unobvious in view of Lantremange under the Graham test. It follows, that the method claim 15 is believed to be unobvious over Lantremange in view of Zhu and further in view of Schemmann because the hypothetical Lantremange in view of Zhu and further in view of Schemmann device is a narrower device than the Lantremange device itself.

8. The Examiner has rejected claim 25 under 35 U. S. C. 103(a) as being unpatentable over Lantremange in view of Zhu and in further view of McBurney (U. S. Patent No. 6,150,978). The applicant respectfully disagrees.

Indeed, the claim 25 is a method claim corresponding to the apparatus claims 30-35. As was stated above, the apparatus claims 30-35 of the present invention as amended are believed to be unobvious in view of Lantremange under the Graham test. Therefore, the method claim 25 is also believed to be unobvious in view of Lantremange under the Graham test. It follows, that the method claim 25 is believed to be unobvious over Lantremange in view of Zhu and further in view of McBurney because the hypothetical Lantremange in view of Zhu and further in

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further in view of McBurney device is a narrower device than the Lantremange device itself.

9. Claims 1-40 are presently pending in the application. Claims 26-29 and 36-40 are withdrawn from consideration. Claims 1-25 and 30-35 are believed to be in condition of allowance. Reconsideration of the rejections is respectfully solicited.

August 6, 2006

Respectfully Submitted,



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